OBJECTIVE: Many conditions have strong diurnal components which may influence work productivity. We evaluate the relationship between sleep impairment and productivity loss using symptomatic daytime vs. nighttime gastro-esophageal reflux disease (GERD) as an example. **METHODS:** An Internet survey of employed US adults measured GERD symptom frequency and severity (prior 12 months and prior seven days). GERD status was assessed with the validated GERD-SMQ. General health-related and GERD-specific productivity losses were evaluated using the WPAI questionnaire. Nighttime sleep impairment (SI) was assessed by a panel of six questions concerning sleep problems. Our conceptual framework modeled the impact of nighttime symptoms as causing SI which, in turn, influences daytime work productivity. Thus, two-equations: 1) SI as a function of GERD status (and covariates); and 2) WPAI as a function of SI (and covariates), were simultaneously estimated using three-stage least squares (3SLS) regression. Results were compared to those of an alternative instrumental variables specification. **RESULTS:** Of 65,001 individuals invited to participate, 13,231 (21.4%) responded. A total of 1002 were symptomatic GERD cases (476 nighttime vs. 526 daytime) which were included in the analysis. 3SLS showed nighttime vs. daytime GERD was associated with a significant increase in SI ($\Delta = 33.6\%$, $p < 0.001$). Respondents with severe or very severe GERD also experienced greater SI ($\Delta = 39.1\%$, $p < 0.005$). SI was shown to have a large impact on work productivity (elasticity = 5.4%, $p < 0.001$). χ^2 values were 384 ($p < 0.0001$) and 84.5 ($p < 0.0001$) for the first and second equations. 3SLS results were consistent with the IV specification. **CONCLUSIONS:** Nighttime GERD symptoms significantly impair sleep which results in reductions in daytime work productivity. The impact of the distinct diurnal nature of chronic conditions is little understood. This framework may prove useful in evaluating similar chronic health conditions (eg, asthma) and related adverse events due to medication use.

PGI12

COMPARISON OF THE MEDICATION POSSESSION RATIO ALONE AND IN COMBINATION WITH BREAKTHROUGH EVENTS FOR CLASSIFYING PATIENTS WITH ACID RELATED DISEASES

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OBJECTIVES: To determine whether the Medication Possession Ratio (MPR) alone or in combination with Breakthrough Events (BEs), was more likely to differentiate between patients. **METHODS:** Medical and prescription claims for MCO enrollees diagnosed with or receiving therapy for Acid Related Diseases (ARD) between July 1, 2001 and June 30, 2003 in the Pharmetrics database were retrieved. Selected for study were persons over 18 with an ARD diagnosis and a minimum 30 days supply during the time period for study inclusion. The study classified ARD patients by their MPR alone and in combination with specified BEs into five cohorts and examined how each classification method was able to correctly differentiate persons based on their economic data, utilization data, ARD-specific comorbidities, and other comorbidities through paired comparison tests. Pairwise group comparisons were made between cohorts using Bonferroni's (Dunn's) method for multiple comparisons of continuous variables and chi-squared paired comparison tests for discrete variables. Differences were considered to be statistically significant if $p <= 0.05$. **RESULTS:** The study identified a population of 79,454 persons with 700,846 claims for PPI prescriptions during the two-year time frame. Overall, the analysis plan identified 760 possible matched pair comparisons and 43 comparisons between the top two cohorts. The MPR alone method identified 523 (68.8%) and the MPR combination method identified 464 (61.1%) significant pairwise comparisons. In comparing the top two cohorts, the MPR alone method identified 29 (67.4%) compared with the combination methods 19 (44.2%). The only areas where the combination method outperformed the MPR alone method were for comparing the top two cohorts in terms of ARD-Specific comorbidities and for costs in the Emergency Department. **CONCLUSION:** The MPR only method outperforms the MPR in combination with the existence of BEs at differentiating patients with ARD.

PGI13

USING ADVANCED SIMULATION MODELING TO EXAMINE THE IMPACT OF INCREASED RESOURCES ON PATIENT THROUGHPUT IN OUTPATIENT CARE

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OBJECTIVE: Making process and technology changes in clinical practice is often complex and costly. The interdependence of processes, staff, technology and patients can bias static models. Dynamic system simulations can identify problems, and solutions, by imitating actual processes over time. Our objective was to examine the efficiency possible with increased resources in an outpatient endoscopy unit using discrete event simulation. **METHODS:** We designed a computer simulation model (Anylogic™, Access™) of a three procedure room outpatient endoscopy unit with eight shared preparation/recovery rooms. Design involved documenting patient and staff flow; determining process times via observation studies, chart reviews and staff interviews; and validating output with actual performance data. The model simulates 20 working days and generates mean daily statistics. Outcome measures include patient throughput (patients per day, PPD) and length of stay in minutes (LOS), calculated as mean patient time from arrival to discharge. Scenarios included doubling staff, adding combination responsibility nurses or adding prep/recovery rooms to the baseline model. **RESULTS:** At baseline, the unit averaged 17 PPD, 177 minute LOS. Outcome statistics for scenarios are (PPD, LOS): doubled staff (18, 164), one nurse (18, 168), two nurses (18, 166), one room (19, 184), two rooms (20, 192). Two additional prep/recovery rooms results in the largest throughput impact (+3 PPD), but increases LOS 15 minutes. The addition of one nurse results in 98% of the throughput achieved with doubled staff (+1 PPD) and reduces LOS by nine minutes. **CONCLUSIONS:** Increasing space capacity results in the largest throughput in this unit suggesting a potential solution to patient backlogs over time. However, adding one nurse both increases productivity and reduces patient LOS. Diminishing marginal returns for increased nursing units were observed. Further modeling may illuminate strategies to optimize efficiency and profit while also improving measures of customer satisfaction (i.e., LOS).

PGI14

DOES A CLINICAL STUDY REFLECT REAL-LIFE AND REAL-LIFE COSTS

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OBJECTIVE: The objective was to investigate whether a former randomised study (the Nexium One study) reflects real-life in